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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPEAL TO THE BOARD OF PATENT APPEALS AND INTERFERENCES

Serial No:	10/668,793	Docket No:	581
Filing Date:	09/22/2003	Applicant:	Gioni Bianchini
Examiner:	NGUYEN, TRUC T	Art Unit:	2833
Title:	**FIBER OPTIC TRANSCEIVER PACKAGE WITH INTEGRAL EMI GASKET**		

TRANSMITTAL OF APPEAL BRIEF

Transmitted herewith are the following:

1. Appeal brief.

2. Authorization is hereby given to charge the brief filing fee of $170, and any other required fees, to deposit account number 11-1245. Applicant is entitled to Small Entity Status.

3. The proceedings herein are for a patent application and the provisions of 37 CFR 1.136 apply. Applicant believes that no extension of time is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition for extension of time.

Respectfully submitted,

Date: October 5, 2004

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Certificate of Mailing (37 CFR 1.8a): I hereby certify that this paper (along with any referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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APPEAL BRIEF

1. Real Party in Interest: Applicants herein, Gioni Bianchini and Iggoni Fajardo.

2. Related Appeals and Interferences: None known to Applicant.

3. Status of Claims: Claims 1-7 stand rejected as indefinite under 35 USC §112. Claims 1 and 3 stand rejected as anticipated (35 USC §102) by Jones. Claims 1 and 5-7 stand rejected as anticipated (35 USC §102) by Hwang. Claims 2 and 4 stand rejected as obvious (35 USC §103) over Jones. Applicants appeal all the rejections of claims 1-7.

4. Status of Amendments: The amendment filed August 3, 2004, has not been entered.

5. Summary of Claimed Subject Matter: A package for a fiber optic transceiver that integrates the intermediate rear gasket (Figs. 2 and 6, elements 16 and 18) into the lower body of the transceiver package. The metallic EMI fingers (Figs. 2 and 4, element 18) of

the intermediate rear gasket are simply extensions of the metallic transceiver cage. As such, the EMI fingers of the present invention are much thicker than current art EMI fingers. Standard EMI fingers are approximately 0.002" thick. The integral EMI fingers of the present invention are 0.010" thick. (Page 5, lines 8-10.) In current art devices, providing such robust EMI fingers is not possible. If substantial EMI fingers are utilized with current art connecting mechanisms, the contact of the fingers with a transceiver inserted into the package on the PCB displaces the components of the transceiver relative to the PCB, thereby compromising the electrical contacts of the components of the transceiver.

To solve this problem, the present invention utilizes a design patented in U.S. Patent No. 6,764,318, issued Jul. 20, 2004, during the pendency of this application, and owned by the assignee herein, for the connecting pins (Figs. 1, 2, 7, and 8, element 20) that secure the transceiver cage to the PCB. The connecting pins are self-centering press-fit pins formed from a plurality of legs. At least one of the legs provides an electrical connection point for the transceiver on which the pins are used. The connecting pin is formed so that the legs act as leaf springs to securely hold the connector in place in the proper installation hole in the board on which the transceiver is installed. The pins are stamped from sheet metal with a progressive die process. By changing the amount of flexion in the legs of the pin, the pressure required to insert the pin into a connection hole, and hence the retaining pressure, can be varied. (Page 5, line 21, through page 7, line 6.)

6. Grounds of Rejection to be Reviewed on Appeal: (A) Applicants appeal the rejection of claims 1-7 under 35 USC §112. The Examiner contends that the recitation of

"at least one protruding finger that shields an interior of said transceiver cage" renders the claims indefinite. Applicants contend that the phrase is well defined.

(B) Applicants appeal the rejection of claims 1 and 3 as anticipated (35 USC §102) by Jones, and claim 1 as anticipated (35 USC §102) by Hwang. The Examiner contends that both Jones and Hwang disclose all the elements recited in the referenced claims. Applicants contend that neither of the cited references discloses an integral rear intermediate EMI gasket formed with at least one upward protruding finger.

(C) Applicants appeal the rejection of claims 5-7 as anticipated (35 USC §102) by Hwang. The Examiner contends that Hwang discloses the connecting pins as claimed in claims 5-7. Applicants contend that Hwang discloses only the "eye of needle" pins admittedly known in the art, and not the arced pins as defined in claims 5-7.

(D) Applicants appeal the rejection of claims 2 and 4 as obvious (35 USC §102) over Jones. The Examiner contends that Jones renders obvious the thicker than industry standard EMI fingers as claimed in claims 2 and 4. Applicants contend that Jones discloses no element that could be considered equivalent to the upward protruding fingers of the present invention, and accordingly can make no disclosure of the thickness of any such fingers. Moreover, the added thickness is not possible with prior art structures.

7. Argument: (A) **THE PHRASE "AT LEAST ONE PROTRUDING FINGER THAT SHIELDS AN INTERIOR OF SAID TRANSCEIVER CAGE" DOES NOT RENDER THE CLAIMS INDEFINITE**.

In the Office Action mailed 06/03/2004, the Examiner rejected all the claims on the basis that the phrase "at least one protruding finger that shields an interior of said transceiver cage" renders the claims indefinite. Applicants contend that the phrase "at least one" is well defined, and is commonly used as a claim restriction.

The Examiner indicates in that Office Action that he does not understand how one finger could shield an interior of the cage, and that this restriction feature was not included in the original disclosure. Applicant would point out that the actual limitation is "at least one" finger, which means that it can be any number of fingers forming the shield. Applicant further points out that this limitation was in the original claim 1, and therefore is most certainly included in the original disclosure. Applicant further points out that a single finger could be as wide as the interior of the cage, and could thus protect the interior as claimed.

(B) **NEITHER JONES NOR HWANG DISCLOSES AN INTEGRAL REAR INTERMEDIATE EMI GASKET FORMED WITH AT LEAST ONE UPWARD PROTRUDING FINGER**

The Examiner contends that both Jones and Hwang disclose all the elements recited in present claim 1. Applicants contend that neither of the cited references discloses any element that could be considered the equivalent of an integral rear intermediate EMI gasket formed with at least one upward protruding finger.

The Examiner has never indicated which element is to be considered the equivalent of the fingers recited in claim 1. Inspection of the drawings of both Jones and Hwang disclose no such protruding elements, and no integral rear intermediate EMI gasket. The current standard protocol calls for the rear intermediate EMI gasket to be added to the cage after manufacture of the main cage body. Because there is no disclosure in the prior art of an integral EMI gasket, there is no provision for upwardly extending fingers to form the gasket.

Moreover, the integration of the intermediate rear EMI gasket into the transceiver cage body is not obvious on at least two counts. First, the XFP MSA describes the element as an independent piece. The XFP MSA is the standard set by a multi-source agreement for the industry for the XFP module. The specifications defined therein must be complied with by manufacturers of XFP modules. Therefore the accepted standard practice is to manufacture the intermediate rear EMI gasket as an independent element. (See drawing Fig. 40, XFP MSA, attached hereto in the Evidence Appendix.) Only with the advancements made with the unique construction afforded by the present invention can the intermediate rear EMI gasket be formed as an integral element of the transceiver cage body.

The second area of advancement of the present invention is the securing of the transceiver cage to its host board. When the transceiver is inserted into the transceiver cage body, the intermediate rear EMI gasket has to be deflected to allow the insertion. Because the element forming the EMI gasket must be sufficiently thick to provide adequate protection, a significant force is applied to the connection point between the cage and the

mounting board. If the intermediate rear EMI gasket is formed as an integral component of the transceiver cage body in current art devices, the cage is dislodged from the host board. Only with the unique connecting pin structure of the present invention can the cage withstand the force generated by the deflection of the intermediate rear EMI gasket fingers as the transceiver is inserted. The unique structure of the connecting pins is described more fully below.

(C) **HWANG DOES NOT DISCLOSE CONNECTING PINS AS DESCRIBED AND CLAIMED IN THE PRESENT APPLICATION**

The Examiner contends that Hwang discloses the connecting pins as claimed in claims 5-7. Applicants contend that Hwang discloses only the "eye of needle" pins admittedly known in the art. The "eye of needle" pins are quite common in the industry. Inspection of the Hwang drawings confirms that "eye of needle" pins are utilized in the Hwang device.

A separate co-pending application (serial number 10/402,751, filed 03/28/03, issued Jul. 20, 2004, as patent number 6,764,318) addresses the structure of the connecting pins used in the present invention. The "eye of needle" pins of the current art are flat with an opening stamped in a central area to form two flat legs. As discussed at some length in the co-pending application, the type of connecting legs disclosed in the prior art do not meet the restrictions of present claim 5, which are copied verbatim from that application.

The prior art pins are flat, and as such do not include legs that are arced outward from a first end of the connector pin relative to a central longitudinal axis of the connector

pin, and are then arced inward toward a common terminal section so that the legs are bowed symmetrically about the longitudinal axis. The bowing of the legs creates a tension that causes the legs to act as a leaf spring when the connector pin is inserted into one of the receiving holes of the host board. The structure of the pin is such that outer surfaces of each of the legs lie on arcs of a circle.

The structure of the connecting pins of the present invention, defined in U.S. Patent No. 6,764,318, and with identical restrictions recited in present claims 5-7, is not disclosed in the prior art.

(D) **THE THICKNESS OF THE EMI FINGERS SPECIFIED IN THE PRESENT APPLICATION IS NOT DISCLOSED IN OR RENDERED OBVIOUS BY THE PRIOR ART**

The Examiner contends that Jones renders obvious the thicker than industry standard EMI fingers as claimed in claims 2 and 4. Because there is no disclosure in Jones of any upward protruding fingers, it is difficult to understand how Jones could include any teaching about the construction of the fingers.

The upward protruding metallic fingers forming the integral intermediate rear gasket of the present invention are simply extensions of the lower half of the metallic transceiver cage. As such, the EMI fingers of the present invention are much thicker than current art EMI fingers included on the gasket added to the cage after construction of the main body. Standard independent EMI fingers are approximately 0.002" thick. The integral EMI fingers used to form the intermediate rear gasket of the present invention are 0.010" thick.

The thickness of the EMI fingers is not simply a matter of design choice. Because

of the far more rigid EMI fingers, the connecting pins that affix the transceiver cage to a host board must hold the cage in place far more securely than standard pins when the transceiver module is inserted. Only with the unique connecting pins of the present invention can such thick EMI fingers be utilized. The prior art cannot contemplate using the thicker EMI fingers because there was no means known to adequately secure the cage in position when a greater deflection force was generated during insertion of the transceiver.

In light of the above, Applicants request that the rejections of the pending claims be withdrawn, and the case be allowed to issue.

Respectfully submitted,

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CLAIMS APPENDIX
(Status is as of 08/03/2004 Amendment)

1. (Previously presented) A fiber optic transceiver package comprising:

a main transceiver cage, a lower portion of said cage comprising an intermediate rear EMI gasket, said intermediate rear EMI gasket being an integral component of said transceiver cage so that no attaching operation is required to affix said intermediate rear EMI gasket to said transceiver cage, said intermediate rear EMI gasket being formed by at least one upward protruding finger that shields an interior of said transceiver cage.

2. (Original) The fiber optic transceiver package as defined in claim 1 wherein:

said protruding finger has a thickness of at least 0.005 inches.

3. (Original) The fiber optic transceiver package as defined in claim 1 wherein:

said intermediate rear EMI gasket if formed from a plurality of protruding fingers.

4. (Previously presented) The fiber optic transceiver package as defined in claim 3 wherein:

each said protruding finger has a thickness of at least 0.005 inches.

5. (Currently amended) The fiber optic transceiver package as defined in claim 1 wherein:

said transceiver cage comprises a connecting pin adapted to secure said transceiver cage to a PCB, said connecting pin comprising

more than one leg, and

a terminal section; wherein

said legs are arced outward from a first end of said connector pin relative to a central longitudinal axis of said connector pin toward a midpoint of said connector pin, a diameter of said connector pin being at a maximum at said midpoint, said legs then arcing inward toward a common terminal section so that said legs are bowed symmetrically about said longitudinal axis, a tension generated by said bowing of said legs causing said legs to act as a leaf spring when said connector pin is inserted into one of the receiving holes of the receiving element, said legs being slightly compressed as said midpoint enters the receiving hole to create a flexion force, said flexion force ensuring a tight contact point between each of said legs and a surface of the receiving hole in the receiving element, and

each said leg is arced about a longitudinal axis, so that outer surfaces of said legs lie on arcs of a circle.

6. (Original) The fiber optic transceiver package as defined in claim 5 wherein:

a magnitude of said flexion force is varied by varying an amount of at-rest arc placed in said legs during manufacturing.

7. (Original) The fiber optic transceiver package as defined in claim 5 wherein:

said connector pin is formed as an integral portion of said cage.

EVIDENCE APPENDIX

1. Fig. 40 and description from the XFP MFS. (Two pages.)

6.10 XFP CAGE ASSEMBLY DIMENSIONS

The Cage Assembly requires EMI shielding capability for both front and back portions of the cage along with providing guidance for the connector, retention of the transceiver and features for heat sink attachment. The location of the EMI gaskets for a reference design is illustrated in Figure 40 and a description of each EMI gasket is described in the sections below. The dimensional requirements for the cage are illustrated in Figure 41.

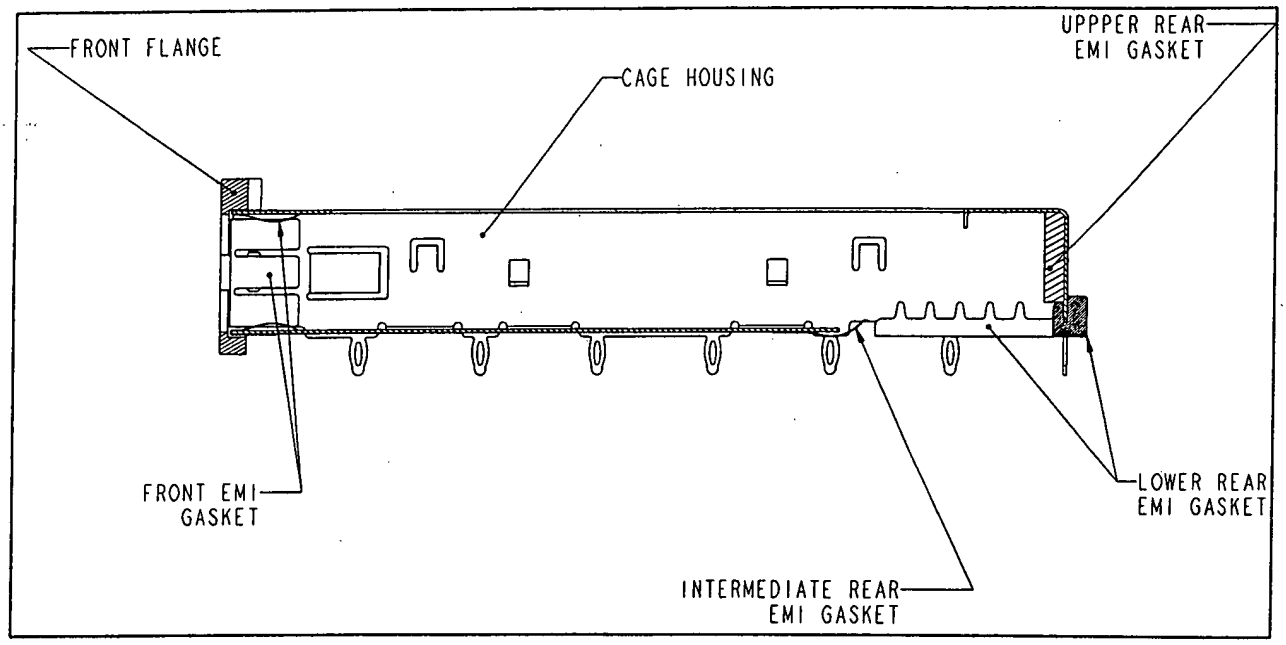

Figure 40 XFP Cage Components

6.10.1 XFP CAGE HOUSING

The metal cage has compliant leads for assembly to the host board. The cage material is copper alloy and the recommended plating options are:

- Tin-lead plate 2.54 micrometers minimum over copper flash
- Tin plate 2.54 micrometers minimum over 0.76 micrometers minimum nickel

or the equivalent materials.

6.10.2 XFP CAGE REAR EMI GASKETS

The purpose of the rear EMI Gaskets is to block any emissions that are emanating from the rear of the transceiver and carry them to chassis ground in the Host Board by directly contacting the transceiver.

6.10.2.1 XFP UPPER REAR EMI GASKET

The Upper Rear EMI Gasket is fastened to the rear inside surface of the cage with pressure sensitive adhesive. The recommended material for this gasket is conductive foam.

6.10.2.2 LOWER REAR EMI GASKET

The Lower Rear EMI Gasket is fastened to the bottom of the cage and contacts the bottom surface of the transceiver skirt. The recommended material for this gasket is a conductive elastomer.

6.10.2.3 XFP INTERMEDIATE REAR CAGE EMI GASKET (FINGER STOCK)

The Intermediate Rear EMI Gasket is fastened to the bottom of the cage and simultaneously contacts the transceiver and Host Board. The preferred design is illustrated as a series of metal springs consisting of a copper alloy material. The recommended plating options are:

- Tin-lead plate 2.54 micrometers minimum over copper flash
- Tin plate 2.54 micrometers minimum over copper flash
- or equivalent materials.

6.10.3 XFP CAGE FRONT CAGE EMI GASKET (FINGER STOCK)

The purpose of the Front EMI Gasket is to create a seal between the transceiver and the inside surface of the cage. The preferred design is illustrated as a series of metal springs that are fastened to the front of the cage and held in place by the front flange. The Front EMI Gasket material is copper alloy and the recommended plating options are:

- Tin-lead plate 2.54 micrometers minimum over copper flash
- Tin plate 2.54 micrometers minimum over copper flash
- or equivalent materials.